
computers & structures

An
International
Journal

List of Contents and Author Index
Volume 49, 1993



PERGAMON

computers & structures

An
International
Journal

editor-in-chief

Prof. H. Liebowitz c/o A.E.R.D.C.O.
P.O. Box 25736
Washington, DC 20007-8736, U.S.A.

editorial advisory board

**Prof. E. R. Arantes e
Oliveira**
Lisbon, Portugal

Prof. H. Ashley
Calif., U.S.A.

Prof. S. N. Atluri
Ga, U.S.A.

Dr M. L. Baron
N.Y., U.S.A.

Prof. K. J. Bathe
Mass., U.S.A.

Prof. B. A. Boley
N.Y., U.S.A.

Prof. L. Broglio
Rome, Italy

Dr T. A. Cruse
Tenn., U.S.A.

Prof. S. J. Fenves
Pa, U.S.A.

Dr R. E. Fulton
Va, U.S.A.

Dr D. S. Griffin
Pa, U.S.A.

Dr M. C. Junger
Mass., U.S.A.

Dr Z. Knesl
Brno, Czech Republic

Prof. R. D. Logcher
Mass., U.S.A.

Dr R. H. MacNeal
Calif., U.S.A.

Prof. P. V. Marcal
Calif., U.S.A.

Prof. Ch. Massonnet
Liège, Belgium

Dr R. J. Melosh
N.C., U.S.A.

Prof. T. Moan
Trondheim, Norway

Prof. F. Niordson
Lyngby, Denmark

Prof. A. K. Noor
Va, U.S.A.

Prof. J. T. Oden
Tx., U.S.A.

Prof. K. A. V. Pandalai
Madras, India

Prof. T. H. H. Pian
Mass., U.S.A.

Dr G. G. Pope
Hants, U.K.

Prof. E. P. Popov
Calif., U.S.A.

Dr J. P. Raney
Va, U.S.A.

Prof. J. N. Reddy
Va, U.S.A.

Dr E. M. Q. Røren
Oslo, Norway

Prof. L. A. Schmit, Jr
Calif., U.S.A.

Prof. E. Sevin
D.C., U.S.A.

Dean A. Sherbourne
Ontario, Canada

Mr I. C. Taig
Preston, U.K.

Prof. B. H. V. Topping
Edinburgh, U.K.

Prof. T. G. Toridis
D.C., U.S.A.

Prof. F. Venancio-Filho
Rio de Janeiro, Brazil

Prof. Y. Yamada
Tokyo, Japan

Prof. O. C. Zienkiewicz
Swansea, U.K.

Production Editor: Mark Lazenby, Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.

Publishing, Subscription, and Advertising Offices: Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A., or Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.

Published semi-monthly (four volumes 1993)

Annual subscription rates (1994)

Annual Institutional Subscription Rates 1994: North, Central and South America, U.S.\$2450; Rest of World, £1591. Associated Personal Subscription Rates are available on request for those whose institutions are library subscribers. Sterling prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice.

Second class postage paid at Rahway, NJ. Postmaster send address corrections to Computers & Structures, c/o Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appears in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.

Copyright © 1994 Elsevier Science Ltd

Cover design by Mr J. Koukos

LIST OF CONTENTS

NUMBER 1

K. M. Liew, Y. Xiang and S. Kitipornchai	1	Transverse vibration of thick rectangular plates—I. Comprehensive sets of boundary conditions
K. M. Liew, Y. Xiang and S. Kitipornchai	31	Transverse vibration of thick rectangular plates—II. Inclusion of oblique internal line supports
K. M. Liew, Y. Xiang and S. Kitipornchai	59	Transverse vibration of thick rectangular plates—III. Effects of multiple eccentric internal ring supports
K. M. Liew, Y. Xiang and S. Kitipornchai	69	Transverse vibration of thick rectangular plates—IV. Influence of isotropic in-plane pressure
G. S. Ray and B. K. Sinha	79	Stress analysis of an asymmetric turbo-disc
I. Patlashenko and T. Weller	89	Cubic <i>B</i> -spline collocation method for nonlinear static analysis of panels under mechanical and thermal loadings
S. K. Nath, S. Majumdar and S. Sengupta	97	Finite element simulation of two-dimensional seismic wave propagation
G. Karami and G. Kuhn	107	Body-force linear elastic stress intensity factor calculation using boundary element method
Z. Abduljabbar, M. M. ElMadany and H. D. Al-Dokhiel	117	Controller design of a one-link flexible robot arm
A. Shamsian, M. Mosavi and F. Javid Rad	127	Finite element buckling analysis of sandwich shells
K. T. Danielson and J. T. Tielking	133	Fourier continuum finite elements for large deformation problems
R. M. V. Pidaparti and A. V. Hudli	149	Dynamic analysis of structures using object-oriented techniques
M. Rezaiee-Pajand and M. R. Salary	157	Three-dimensional sensitivity analysis using a factor- ing technique
A. A. Gates and M. L. Accorsi	167	Automatic shape optimization of three-dimensional shell structures with large shape changes
Wang Jianguo, Wang Xiuxi and Huang Maokuang	179	A boundary integral equation formulation for thick plates on a Winkler foundation
A. Mashaie, E. Hughes and J. Goldak	187	Error estimates for finite element solutions of elliptic boundary value problems

P. Subramanian	199	A higher order theory for bending of isotropic plates
		<i>Announcement</i>
	205	Call for papers: The Second International Conference on Computational Structures Technology
	I	Software Survey Section

NUMBER 2

M. K. Ghosh and D. E. Brewster	207	Thermomechanical analysis of a dry shaft-multi-layered bush tribosystem using the finite element method
T. M. V. Kaiser, A. E. Elwi and A. Mioduchowski	219	A nonlinear axisymmetric finite element for modelling nonaxisymmetric behaviour
M. J. Kim, Z. H. Chen and P. Majumdar	231	Finite element modelling of the laser cutting process
R. Belevicius and P. Pedersen	243	Analysis and sensitivity analysis by computer algebra for a third-order plate finite element
S. Vijayarangan and N. Ganesan	253	A static analysis of composite helical gears using a three-dimensional finite element method
P. K. Roy and N. Ganesan	269	A vibration and damping analysis of circular plates with constrained damping layer treatment
P. K. Roy and N. Ganesan	275	Dynamic stress analysis of a tapered cantilever square plate under impact load
A. Bose and K. S. Surana	283	Piecewise hierarchical p -version curved shell finite element for heat conduction in laminated composites
G. Maymon	301	Probability of failure of structures without a closed-form failure function
A. Ghazavi, F. Gordaninejad and N. G. Chalhoub	315	Dynamic analysis of a composite-material flexible robot arm
T. D. G. Canisius and R. O. Foschi	329	Mindlin finite strips with support displacements
M. A. De Rosa	341	Stability and dynamic analysis of two-parameter foundation beams
A. S. Gendy and A. F. Saleeb	351	Generalized yield surface representations in the elasto-plastic three-dimensional analysis of frames
M. H. Omurtag and A. Y. Aköz	363	A compatible cylindrical shell element for stiffened cylindrical shells in a mixed finite element formulation

- Technical Notes*
- E. H. Lahlouh, P. Waldron and N. J. Woodman 371 Assessing the structural performance of a novel form of precast concrete silo
- G. Prathap 381 A variational basis for Barlow points
- E. Mahajerin and G. Burgess 385 An algorithm for computing derivatives of any order of a complex or real function

Announcement

- 389 Call for papers: The Second International Conference on Computational Structures Technology

I Software Survey Section

NUMBER 3

- V. E. Bulgakov 391 On the two-grid approximate approach for constructing sparse boundary systems in substructuring
- C. I. Chen, V. H. Mucino and E. J. Barbero 399 Finite element vibration analysis of a helically wound tubular and laminated composite material beam
- Chih-Ping Wu and Chung-Bing Yen 411 Interlaminar stress mixed finite element analysis of unsymmetrically laminated composite plates
- K. S. Woo 421 Robustness of hierarchical elements formulated by integrals of Legendre polynomials
- M. A. Khaleel and R. Y. Itani 427 Optimization of partially prestressed concrete girders under multiple strength and serviceability criteria
- L. A. Shultz and V. R. Murthy 439 Direct application of the transfer matrix method to solve nonlinear autonomous boundary value problems with multiple branches
- A. Jutila, A. Tesar, E. Isoksela and L. Salokangas 453 Space behaviour of thin-walled box beams
- N. S. Khot, R. Polyak, R. Schneur and L. Berke 467 Application of Newton modified barrier method to structural optimization
- P. K. Roy and N. Ganesan 473 Dynamic studies on plates with unconstrained layer treatment
- K. R. Sivadas and N. Ganesan 481 Effect of coupling between in-plane strains and twist due to anisotropy on vibration of composite shells
- A. Joseph Stanley and N. Ganesan 495 Deformation of cylindrical shells with discontinuity in thickness subjected to axisymmetric loading
- Y. B. Kwon and G. J. Hancock 507 Post-buckling analysis of thin-walled channel sections undergoing local and distortional buckling

Y. J. Lee, H. J. Lin and Y. J. Liou	517	The dynamic buckling strength of spherical caps
Tan Dongyao	523	Discrete analysis method for random vibration
A. K. Das and J. N. Bandyopadhyay	531	Theoretical and experimental studies on conoidal shells
M. C. M. Fonseca	537	A sub-structure condensation technique in finite element analysis for the optimal use of computer memory
Z. Friedman and J. B. Kosmatka	545	Exact stiffness matrix of a nonuniform beam—II. Bending of a Timoshenko beam
		<i>Technical Notes</i>
Jian-Zhong Wang, Zhi-Chu Huang and Qing-Jie Zhang	557	Sensitivities of mechanical structures to structural parameters
J. Noorzaei, P. N. Godbole and M. N. Viladkar	561	Non-linear soil-structure interaction of plane frames—a parametric study
		<i>Announcement</i>
	567	Call for papers: The Second International Conference on Computational Structures Technology
		I Software Survey Section

NUMBER 4

A. K. Noor, M. J. Hadian and C. M. Andersen	569	Hybrid analytical technique for evaluating the sensitivity of the nonlinear vibrational response of beams
W. H. Tsao and C. T. T. Hsu	579	A nonlinear computer analysis of biaxially loaded L-shaped slender reinforced concrete columns
R. I. K. Moorthy, A. Kakodkar, H. R. Srirangarajan and S. Suryanarayan	589	Finite element simulation of chaotic vibrations of a beam with non-linear boundary conditions
R. I. K. Moorthy, A. Kakodkar, H. R. Srirangarajan and S. Suryanarayan	597	An assessment of the Newmark method for solving chaotic vibrations of impacting oscillators
J. N. Reddy and J. H. Starnes, Jr	605	General buckling of stiffened circular cylindrical shells according to a layerwise theory
C. W. Shao, F. W. Liou and A. K. Patra	617	A contact phase model for the analysis of flexible mechanisms under impact loading

Y. Calayir and A. A. Dumanoglu	625	Static and dynamic analysis of fluid and fluid-structure systems by the Lagrangian method
D. Givoli and L. Rivkin	633	The DtN finite element method for elastic domains with cracks and re-entrant corners
C. Dunder and B. Sahin	643	Arbitrarily shaped reinforced concrete members subject to biaxial bending and axial load
V. Haktanir and E. Kiral	663	Statical analysis of elastically and continuously supported helicoidal structures by the transfer and stiffness matrix methods
S. Hassiotis and G. D. Jeong	679	Assessment of structural damage from natural frequency measurements
D. S. Sophianopoulos, S. S. Ioannidis and I. Ch. Ermopoulos	693	Dynamic analysis of horizontally stayed bridges under wind loading
N. Kishi, W. F. Chen, Y. Goto and K. Matsuoka	705	Analysis program for the design of flexibly jointed frames
H. P. Lee and S. P. Lim	715	Vibration of cracked rectangular plates including transverse shear deformation and rotary inertia
W. P. Schonberg and J. A. Peck	719	Parametric study of multi-wall structural response to hypervelocity impact by non-spherical projectiles
<i>Technical Notes</i>		
A. E. Anuta, Jr	747	The viscously damped modal equations in relativity
Zhong Wanxie and F. W. Williams	749	Physical interpretation of the symplectic orthogonality of the eigensolutions of a Hamiltonian or symplectic matrix
<i>Announcement</i>		
	751	Call for papers: The Second International Conference on Computational Structures Technology

I Software Survey Section

NUMBER 5

S. Mohd and D. J. Dawe	753	Finite strip vibration analysis of composite prismatic shell structures with diaphragm ends
Ph. Menétrey and Th. Zimmermann	767	Object-oriented non-linear finite element analysis: application to J2 plasticity
M. Okrouhlik and C. Höschl	779	A contribution to the study of dispersive properties of one-dimensional Lagrangian and Hermitian elements

- C. Gantes, R. Khoury, J. J. Connor and C. Pouangare** 797 Modeling, loading, and preliminary design considerations for tall guyed towers
- L. Karaoğlu and G. S. Springer** 807 Axial impact of composites
- D. L. Prabhakara and P. K. Datta** 825 Vibration and static stability characteristics of rectangular plates with a localized flaw
- M. A. Saadeghvaziri** 837 Finite element analysis of highway bridges subjected to moving loads
- G. D. Stefanou, E. Moossavi, S. Bishop and P. Koliopoulos** 843 Conjugate gradients method for calculating the response of large cable nets to static loads
- P. D. Andriotaki-Panayotounakou** 849 The analysis of a three-dimensional rigid-jointed rectangular plexus frame
- R. Sygulski** 867 Vibrations of pneumatic structures interacting with air
- H. Adeli and J. Wilcoski** 877 *Technical Notes*
A methodology for the evaluation of structural design software
- Y. M. Xie and G. P. Steven** 885 A simple evolutionary procedure for structural optimization
- R. Cortell** 897 Application of the fourth-order Runge-Kutta method for the solution of high-order general initial value problems
- F. L. DiMaggio, D. Rubin and I. S. Sandler** 901 Letter to the Editor

Announcement

- 903 Call for papers: The Second International Conference on Computational Structures Technology

I Software Survey Section

NUMBER 6

- Dejuan Guan and Xiangzhou Zhang** 905 Modified designs and modified computations
- S. Gopalakrishnan, S. V. Krishna Mohan Rao and T. V. S. R. Appa Rao** 913 Nonlinear analysis of reinforced concrete hyperboloid cooling towers—I. Material model, finite element model and validation
- S. Gopalakrishnan, S. V. Krishna Mohan Rao and T. V. S. R. Appa Rao** 923 Nonlinear analysis of reinforced concrete hyperboloid cooling towers—II. Parametric study and results

S. Y. Lee and S. M. Lin	931	Levy-type solution for the analysis of nonuniform plates
K. M. Liew and C. M. Wang	941	Vibration studies on skew plates: treatment of internal line supports
L. Damkilde and O. Høyer	953	An efficient implementation of limit state calculations based on lower-bound solutions
M. S. Cheung, G. Akhras and W. Li	963	Stability analysis of anisotropic laminated composite plates by finite strip method
E. Kochavi, R. Segev and Y. Yomdin	969	Modified algorithms for nonconforming Taylor discretization
F. K. Ibrahim	981	An elastoplastic cracked-beam finite element for structural analysis
H. Y. Chan and R. E. Melchers	989	A simulation method for time-dependent structural reliability
H. R. Busby and N. G. V. Saidiwakar	997	Finite element analysis of composites using Chebyshev polynomials
I. E. Harik and M. Guo	1007	Finite element analysis of eccentrically stiffened plates in free vibration
J. H. Liu and K. S. Surana	1017	p -Version axisymmetric shell element for geometrically nonlinear analysis
G. R. Miller	1027	Coordinate-free isoparametric elements
G. P. Nikishkov and S. N. Atluri	1037	Implementation of a generalized midpoint algorithm for integration of elastoplastic constitutive relations for von Mises' hardening material
T. L. Wang	1045	Impact in a railway truss bridge
T. L. Wang, M. Shahawy and D. Z. Huang	1055	Dynamic response of highway trucks due to road surface roughness
Kim Yong-woo and Min Oak-key	1069	Theoretical review on the spurious modes in plane-stress/strain isoparametric meshes
Z. Q. Chen and T. J. A. Agar	1083	Geometric nonlinear analysis of flexible spatial beam structures
Ch. Rama Mohana Rao and G. Muthuveerappan	1095	<i>Technical Note</i> Finite element modelling and stress analysis of helical gear teeth
	1107	<i>Announcement</i> Call for papers: The Second International Conference on Computational Structures Technology

- I Software Survey Section
- i List of Contents and Author Index for Volume 49,
1993

